

KENTUCKY ROUTE 228 BRIDGE
Spanning Wolf Creek
Wolf Creek
Meade County
Kentucky

HAER NO. KY-21

HAER
KY,
82-WOORE,
1-

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
SOUTHEAST REGION, NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR
ATLANTA, GEORGIA 30303

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HISTORIC AMERICAN ENGINEERING RECORD

Kentucky Route 228 Bridge

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Location: Spanning Wolf Creek near the Wolf Creek-Ohio River
confluence, Wolf Creek vicinity, Meade County, Kentucky

UTM: 16.553515-4217600
Quad: Alton

Date of Construction: 1885

Builder/Designer: Smith Bridge Company of Toledo, Ohio

Present Owner: Kentucky Transportation Cabinet
State Office Building
Frankfort, Kentucky 40622

Present Use: Vehicular bridge

Significance: Longest of the six Whipple-Murphy truss bridges in
Kentucky.

Historian: Jayne C. Henderson

The Kentucky Route 228 Bridge over Wolf Creek in Meade County is eligible for listing in the National Register of Historic Places. It is located immediately north of the community of Wolf Creek and just east of the confluence of Wolf Creek with the Ohio River.

The Kentucky Route 228 Bridge is classified as a Whipple-Murphy or Double Intersection Pratt through truss built by the Smith Bridge Company of Toledo, Ohio, in 1885. The structure is a one-lane single span truss, 209 feet long with an overall width of 15.5 feet, a roadway width of 14 feet, and a 16.75 foot vertical clearance. The posted weight limit is 3 tons. The current structural and appraisal rating of the bridge is 39.9 out of a possible 100 points.

The bridge was built by the Smith Bridge Company, a prolific builder of wooden, iron and combination truss bridges. The company was incorporated by R. W. Smith in Toledo, Ohio, in 1867 and became the Toledo Bridge Company in the early 1890s. Smith, who held many patents for bridge design, prefabricated the bridges at his work yard in Toledo and shipped them to the site for assembly.

There are currently six Whipple-Murphy truss bridges in existence in Kentucky, of which the Kentucky Route 228 Bridge is the longest. The Whipple-Murphy truss is a modification of the basic Pratt truss with inclined end posts and double intersection diagonals (diagonals that extend across two panels). The design is named for the two men who developed it. Squire Whipple, a pioneer in the scientific approach to bridge design, first built a double intersection Pratt truss for railroad use in 1852 near Troy, New York. In 1863, J. W. Murphy built a double intersection Pratt truss, using wrought iron for the compression members while retaining cast iron in joint blocks and pedestals. A third bridge builder who contributed to the design was J. H. Linville, who introduced the use of die-forged eyebars as tension members in the web system in 1861.

On the Kentucky Route 228 Bridge, the end posts and top chords are built-up members comprised of two channels, cover plate and stay bars. The bottom chords are two rectilinear eyebars with die-forged eyes on either end except in the four center panels, which utilize four rectilinear eyebars.

The hip verticals are two round eyebars that are loop welded. Intermediate posts, portal braces and portal struts are comprised of two channels connected by lacing bars. Diagonals consist of two rectilinear eyebars with die-forged eyes and two round eyebars with sleeve-nuts. The top and bottom lateral braces are round rods and the top braces with sleeve-nuts. The floor beams are steel plate girders, which are hung from the lower panel point connecting pins by inverted U-shaped stirrup bars. All truss connections on this bridge are by pins.

Many of the truss members are cast iron, as evidenced by the Carnegie Foundry stamp on some channels and the pre-1895 construction date. The portal strut on either end bears a name plate, and the lower portal brace on either end bears a second plate that names the engineers and commissioners responsible for the construction of the bridge. There is decorative metal work around the edges of each plate, and the lettering is plain.

The stringers are 4-inch by 14-inch creosoted timber resting on the floor beams. The decking, comprised of 2-inch by 4-inch timbers placed on edge, is in fair condition with some signs of deterioration. The runners on the deck consist of 2-inch by 10-inch timbers. The handrail consists of 3-inch by 8-inch timbers fastened to 4-inch by 6-inch handrail posts. There is a 6-inch by 6-inch hubrail fastened to a 4-inch by 6-inch x 2-foot 6-inch riser block with bolts that extend down through the timber decking. The substructure consists of rough cut stone masonry abutments.

In 1985, an overloaded truck collapsed through three panels of the deck at the south end of the bridge, tearing out the timber decking, stringers, and three floor beams. The diagonal cross-bracing was also ripped out. One bottom chord of the truss was completely destroyed and another was badly damaged. Extensive repairs were necessary to restore the bridge to service. Even if the truss were in excellent condition, it would be considered a "weak" bridge because it was designed for the traffic and load requirements associated with the late 1800s. Some of the truss members are cast iron, which is inferior in strength to the steel utilized in modern bridges.

The Wolf Creek Bridge is eligible for the National Register of Historic Places as a structure of both local and statewide importance. The bridge gives an example of workmanship and design characteristics indicative of its time and place in history. Although in extremely poor structural condition, the bridge is a good example of a rare Whipple-Murphy truss. It has served a rural population for over a century.